Usman Azfar

Lahore, Pakistan | +92 324-6967670 | usmanazfarshafiq@gmail.com | Portfolio | GitHub | LinkedIn

Software engineer building dependable backend and AI systems for high-consequence domains — from production financial platforms to edge-deployed safety models and open-source contributions.

EDUCATION

BS Computer Science — PUCIT, University of the Punjab, Lahore 2022–2026
CGPA 3.93/4.00 (1st in Batch; University Gold Medal expected)

FSc Pre-Medical — Punjab College, Lahore / Sahiwal 2019–2021
1083/1100 (98.5%)

Matriculation (Science) — Hira Public School, Nankana Sahib 2017–2019
1080/1100 (98.2%); 2nd position in district

PROFESSIONAL & RESEARCH EXPERIENCE

Associate Software Engineer, Java Spring Boot — InfoTech Group Mar 2026–Present

- Develop and optimize production-grade backend services for Marlin, an enterprise brokerage and financial-market platform, using Java, Spring Boot, REST APIs, and relational databases.
- Designed, developed, and optimized enterprise-scale financial modules — Client Onboarding, Money Market, Cash Management, Fund Withdrawal, Rollover, and Termination — engineering secure end-to-end trade processing, authentication and authorization mechanisms, automated cash settlement, and reporting and client-communication workflows that reduced operational processing time by approximately 30–35%.
- Integrated Ethiopia's Fayda national digital ID (MOSIP eSignet, OpenID Connect) into Marlin's sign-up, online and broker-assisted onboarding, and mobile app. Built the server-side Authorization Code flow with PKCE and private_key_jwt client authentication, verified signed tokens and UserInfo against JWKS (PS256/RS256), and enforced Fayda-verified identity data, including joint holders and beneficiaries, across client onboarding.

AI/ML Intern — Tekvill 6 months

- Built an AI-powered profile automation and enhancement platform using Python, NLP, and LLM prompting, cutting manual effort by 85% and achieving 94% positive user feedback.
- Productionized an AI platform using Docker, contributing to machine-learning model development, testing, deployment, and cross-functional collaboration that increased user engagement by 35%.

Research & Development — HelmX: AI-Powered Smart Helmet for Road Safety — Bachelor's Thesis

- Built and evaluated edge-deployable AI models for motorcycle road safety. A hybrid crash-detection model (Conv1D autoencoder + supervised classifier over inertial-sensor windows) reaches ROC-AUC ~0.95 and runs in sub-millisecond time per window at an ~82 KB INT8 footprint, validated on real Raspberry Pi hardware across a 180-minute live soak with zero deadline misses. A separate temporal driver-drowsiness monitoring system (MediaPipe + MobileNetV3 + temporal network, exported to ONNX) was built with a rigorous subject-disjoint, multi-fold evaluation protocol.
- Led an end-to-end intelligent road-safety prototype integrating hardware sensors, edge AI, a mobile app, and a web dashboard, featuring crash and drowsiness detection, voice control, smart navigation, a virtual AI assistant, and automated emergency response. Emphasized reproducible, honestly-reported evaluation (multi-seed variance, held-out and external test sets, disclosed limitations). Presented and submitted to a panel of senior faculty and external evaluators.

Teaching Assistant — Operating Systems and Data Structures & Algorithms — PUCIT 12 months

- Mentored 160+ students through lab sessions and one-to-one debugging support, covering processes, threads, CPU scheduling, memory management, synchronization, and core data structures and algorithms.

PROJECTS

HelmX — AI-Powered Smart Helmet — Python, TensorFlow/ONNX, Edge AI, Raspberry Pi GitHub

- Bachelor's thesis system (above). The prototype runs on a Raspberry Pi 4 integrating a camera, IMU, environmental and GPS/GSM sensors over I2C/UART and BLE, a voice-controlled assistant (Rhasspy/MQTT) for navigation, media and emergency SMS, plus a companion mobile app and a web dashboard.

CampusCore — Smart Campus Management System — Java 17, Jakarta Servlets/JSP, MySQL, Maven GitHub

- Full-stack campus portal covering enrollment, lecture-wise attendance, grading, GPA/CGPA and transcripts, add/drop requests, fee challans, announcements, and a help desk — built on a hand-written MVC architecture directly on the Servlet API and JDBC, with no web framework. Role-based access control for admin, teacher, and student, plus a live public demo.

MoneyMate — Android Personal Finance App — Kotlin, Android, Firebase, Google Gemini GitHub

- Native Android finance tracker with income, expense, and debt accounting, offline-first Firestore sync, and a PIN/biometric app lock. Integrates Google Gemini for free-form voice entry and a data-grounded finance assistant, with defensive schema validation, on-device fallback, and 56 passing unit tests.

8086 Register Command Debugger — x86 Assembly (8086), MS-DOS GitHub

- Machine-level debugger for MS-DOS written entirely in 8086 assembly, modelled on DEBUG.COM: inspects and edits registers, flags, and memory, disassembles code, and single-steps real CPU instructions via the Trap Flag. Assembles to a 6 KB executable and runs in a browser via a WebAssembly DOSBox demo.

OPEN-SOURCE CONTRIBUTIONS

- **OpenBoxes** (open-source supply-chain & inventory platform; Java/Grails, Spring Boot, Hibernate) — authored and merged a new REST API endpoint exposing a user's roles with facility-level filtering, built with DTO/mapper layering, role-based access control, and full unit and HTTP integration tests. PR #6221.
- While investigating a follow-on issue, found a high-severity access-control vulnerability and reported it through a private GitHub Security Advisory; confirmed it with a runtime proof of concept in an isolated test environment, was credited as reporter, and am coordinating the fix with maintainers ahead of public disclosure.

SKILLS & INTERESTS

- **Languages & Frameworks:** Java, Spring Boot, Python, Kotlin, JavaScript, SQL, x86 Assembly; Jakarta Servlets/JSP, Grails, Hibernate/GORM, JDBC, Android SDK.
- **AI/ML:** TensorFlow, TFLite, ONNX Runtime, PyTorch, scikit-learn, NumPy, MediaPipe; model training, calibration, and edge deployment; NLP and LLM prompting; MCP and multi-agent systems.
- **Data, Cloud & Tools:** MySQL, Oracle, Firebase/Firestore, REST APIs; AWS, Docker, Git/GitHub, Maven, Gradle, JUnit, Linux, Raspberry Pi / edge hardware (I2C, UART, BLE, GPIO).
- **Spoken Languages:** English (professional working proficiency), Urdu (native), Punjabi (native), Arabic (basic).
- **Research Interests:** Dependable and trustworthy AI, edge intelligence, software engineering, and AI for public safety and societal impact.

ENTREPRENEURSHIP

Co-Founder & Technology Contributor, Aetarix — Custom Software & AI Automation

- Co-founded an early-stage software studio delivering custom software, AI automation, and digital-transformation solutions for client businesses. Lead engineering and system architecture, translating client requirements into production-ready backend, AI-integration, and cloud solutions.

International Sourcing & Sales — Import & Resale 1 year

- Independently sourced products from China for resale in Pakistan, managing supplier negotiation, logistics, pricing, and sales — building early entrepreneurial and financial decision-making skills.

COURSES & CERTIFICATIONS

- **AWS Certified Solutions Architect - Associate** (Amazon Web Services) — international certification, active since June 2026 and valid through June 2029; validation number b5f73e5355da404ab9fd8a6ce0b69977.
- **Machine Learning Specialization** (DeepLearning.AI & Stanford Online, Coursera) — Supervised Machine Learning: Regression and Classification; Advanced Learning Algorithms; and Unsupervised Learning, Recommenders, Reinforcement Learning.
- **Deep Learning Specialization courses** (DeepLearning.AI, Coursera) — Neural Networks and Deep Learning; Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization; Structuring Machine Learning Projects; Convolutional Neural Networks; and Sequence Models.
- **AI Agents 101 & 201** (AMD AI Academy) — building AI agents with MCP and open-source inference, and designing and deploying multi-agent systems.
- **AWS Cloud Computing Certification** (NAVTTC, 3 months) — cloud infrastructure, virtualization, networking, storage, security, and core AWS services; verify at nsis.navttc.gov.pk (credentials on request).
- **Graphic Design Certification** (DigiSkills, Government of Pakistan) — Adobe Photoshop and Illustrator, branding, and visual communication.

ACHIEVEMENTS & SCHOLARSHIPS

- **Academic:** 1st in batch, BS Computer Science (3.93/4.00, University Gold Medal expected); 2nd in district at Matriculation (98.2%); 98.5% in FSc.
- **Competitive:** 99.6 percentile, HEC National Skills Competency Test; NSTC-17 qualifier (Top 50 of 15,000); ICPC Regional — Round 1, ranked 30th of 208 teams; Runner-up, COMSATS Technoverse'24 Coding Spree Competition.
- **Scholarships:** CM Punjab Honhaar Scholarship & laptop; Lahore Board Merit / National Talent Scholarship; Punjab Benevolent Fund Scholarship; Punjab College High Merit Scholarship with full FSc fee concession; Student of the Month stipend for two consecutive years in Matriculation.

LEADERSHIP, SERVICE & VOLUNTEERING

- **Final Year Project Lead — HelmX.** Led a 4-member multidisciplinary team across ML research, hardware, edge AI, cloud, and app development; HelmX scored the highest evaluation (59/60) among 15–20 projects.
- **Class Representative — PUCIT.** Represented 60–70 students as the primary liaison with faculty, coordinating academic matters and resolving concerns.
- **Registration Head & Senior Coordinator — Sports Society.** Digitized a manual registration process for 450+ students and coordinated 8+ coordinators across two university-wide events with 1,000+ participants.
- **Community Service.** Led a 5-member volunteer group: educational support, 100+ injections for thalassemia patients, blood-donation drives, and supplies for 150+ orphaned children.